

**REMARKS**

This is in full and timely response to the Office Action mailed on December 4, 2006.

Because March 4, 2007, three months after the mailing date of the Office Action, falls on a Sunday, the period for response is extended to March 5, 2007, which is the next day that is neither a Saturday, Sunday nor a Federal holiday in the District of Columbia.

Reexamination in light of the following remarks is respectfully requested.

Claims 1, 3, and 5-8 are currently pending in this application, with claims 1, 3, and 7 being independent. *No new matter has been added.*

**Rejection under 35 U.S.C. §103**

Paragraph 5 of the Office Action indicates a rejection of claims 1-8 under 35 U.S.C. §103 as allegedly being unpatentable over U.S. Patent No. 6,510,254 to Nakami et al. (Nakami) and U.S. Patent No. 6,707,467 to Suga.

This rejection is traversed at least for the following reasons.

**Claims 1 and 5** - At least for the following reasons, if the allowance of claim 1 is not forthcoming at the very least and a new ground of rejection made, then a **new non-final Office Action** is respectfully requested.

The features of claim 2 have been wholly incorporated into claim 1 to form amended claim 1. Thus, prior claim 2 is now amended claim 1. Claim 5 is dependent upon claim 1. Claim 1 is drawn to an image processing method for a digital image, characterized in that

interpolation signals between discrete original pixels used for calculating an output pixel value are calculated by an FIR digital filter using as an interpolation function a function obtained by composing a function based on a cubic convolution method and a function based on a bilinear method,

wherein said FIR filter uses as an interpolation function a function that is obtained by composing a part of the function based on the cubic convolution method and a part of the function based on the bilinear method and is asymmetric with respect to the right and left.

**Claims 3 and 6** - At least for the following reasons, if the allowance of claim 3 is not forthcoming at the very least and a new ground of rejection made, then a **new non-final Office Action** is respectfully requested.

The features of claim 4 have been wholly incorporated into claim 3 to form amended claim 3. Thus, prior claim 4 is now amended claim 3. Claim 6 is dependent upon claim 3. Claim 3 is drawn to an image processing device for a digital image, characterized by comprising an FIR digital filter using as an interpolation function a function obtained by composing a function based on a cubic convolution method and a function based on a bilinear method for an interpolation signal between discrete original pixels used for calculating an output pixel value,

wherein said FIR filter uses as an interpolation function a function that is obtained by composing a part of the function based on the cubic convolution method and a part of the function based on the bilinear method and is asymmetric with respect to the right and left.

**Claim 7 and 8** - Claim 8 is dependent upon claim 7. Claim 7 is drawn to an electronics apparatus for a digital image, characterized by comprising

an FIR digital filter using as a function a right-and-left asymmetrical interpolating function obtained by composing a function based on a part of a cubic convolution

method and a part of a bilinear method for an interpolation signal between discrete original pixels used for calculating an output pixel value.

Regarding claims 1, 3, and 5-8, the following description is provided for illustrative purposes and is not intended to limit the scope of the invention. The paragraph within the specification as originally filed beginning at page 14, line 13, provides that:

Graphing the interpolating functions in the image processing method of the present invention indicated by (1) and (2) of the equation 5, the graphs shown in FIGS. 8 and 9 are achieved for the interpolating functions, respectively. In the equation of the former (1), the interpolating function based on the bilinear method is used for the area of  $x < 0$  and the interpolating function based on the cubic convolution method is used for the area of  $x \geq 0$  while the boundary between the areas is set to  $x = 0$ . Conversely, in the equation of the latter (2), the interpolating function based on the cubic convolution method is used for the area of  $x \leq 0$ , and the interpolating function based on the bilinear method is used for the area of  $x > 0$ .

**Nakami** - The Office Action admits that **Nakami** fails to teach a FIR filter using an interpolation function (Office Action at page 3).

**Suga** - **Suga** arguably teaches that, as the second resolution transforming processing method, there is adopted a method of obtaining interpolation position data by using the FIR filter employed to the linear interpolation method and the cubic convoluting interpolation method (Suga at column 8, lines 40-45).

But as shown in equation (10) of **Suga** (column 9, lines 31-58), **Suga** fails to disclose, teach, or suggest the FIR filter being asymmetric with respect to the right and left.

Additionally shown by equation (10) of **Suga** (column 9, lines 31-58), **Suga** fails to disclose, teach, or suggest the FIR digital filter using as a function a right-and-left asymmetrical interpolating function.

- *Thus, Nakami and Suga, either individually or as a whole, fail to disclose, teach, or suggest that said FIR filter uses as an interpolation function a function that is obtained by composing a part of the function based on the cubic convolution method and a part of the function based on the bilinear method and is asymmetric with respect to the right and left, as in claim 1.*
- *Moreover, Nakami and Suga, either individually or as a whole, fail to disclose, teach, or suggest that said FIR filter uses as an interpolation function a function that is obtained by composing a part of the function based on the cubic convolution method and a part of the function based on the bilinear method and is asymmetric with respect to the right and left, as in claim 3.*
- *In addition, Nakami and Suga, either individually or as a whole, fail to disclose, teach, or suggest an FIR digital filter using as a function a right-and-left asymmetrical interpolating function obtained by composing a function based on a part of a cubic convolution method and a part of a bilinear method for an interpolation signal between discrete original pixels used for calculating an output pixel value, as in claim 7.*

Withdrawal of this rejection and allowance of the claims is respectfully requested.

### **Conclusion**

For the foregoing reasons, all the claims now pending in the present application are allowable, and the present application is in condition for allowance. Accordingly, favorable reexamination and reconsideration of the application in light of the amendments and remarks is courteously solicited.

If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone Brian K. Dutton, Reg. No. 47,255, at 202-955-8753.

If any fee is required or any overpayment made, the Commissioner is hereby authorized to charge the fee or credit the overpayment to Deposit Account # 18-0013.

Dated: March 5, 2007

Respectfully submitted,

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